WHAT IS CLAIMED IS:

1. An ultrasonic cleaning tank for precision cleaning of electronic components, the cleaning tank comprising:

a top portion having a lower flanged perimeter edge;

a bottom portion having an upper flanged perimeter edge and having a floor that incorporates an inlet port; and

a dispersion plate having a plurality of perforations,

wherein the dispersion plate is sealingly and removably mounted between the lower flanged perimeter edge and the upper flanged perimeter edge, and

wherein upon introducing a cleaning fluid to said inlet port a turbulent flow is created within said bottom portion and a laminar flow is created within said top portion after said cleaning fluid passes through said plurality of perforations of said dispersion plate.

2. The ultrasonic cleaning tank of claim 1 wherein the dispersion plate is sealingly and removably mounted between the lower flanged perimeter edge and the upper flanged perimeter edge using a plurality of fasteners, an upper gasket and a lower gasket.

3. The ultrasonic cleaning tank of claim 2 wherein the plurality of fasteners comprise a plurality of external clamps.

4. The ultrasonic cleaning tank of claim 2 wherein the upper gasket and the lower gasket comprise a gasket material selected from the group consisting essentially of: Teflon, PVDF, EPDM, Viton or perflourinated elastomer.

5. The ultrasonic cleaning tank of claim 1 wherein a sum of the plurality of perforations defines a total perforation area and wherein the total perforation area is less than 45% of the dispersion plate.

6. The ultrasonic cleaning tank of claim 5 wherein the total perforation area is slightly less than or slightly greater than an inlet area of the inlet port.

7. The ultrasonic cleaning tank of claim 1 wherein each of the plurality of perforations has a perforation diameter within the range of 0.001 – 0.250 inches.

8. The ultrasonic cleaning tank of claim 1 wherein the plurality of perforations is configured in a close hex arrangement on the dispersion plate.

9. The ultrasonic cleaning tank of claim 1 wherein the top portion and the bottom portion comprise stainless steel.

10. The ultrasonic cleaning tank of claim 1 wherein the floor includes an inlet plate for directing an inlet flow outwardly and evenly throughout the bottom portion.

11. The ultrasonic cleaning tank of claim 1 wherein an ultrasonic transducer is operably mounted to the upper portion, the ultrasonic transducer selected to supply ultrasonic energy within the upper tank portion at a suitable ultrasonic frequency of between 28 KHz and 2.5 MHz.

12. A method for precision cleaning of electronic, medical or optical components comprising:

positioning an electronic component within a cleaning tank, the cleaning tank including an upper portion and a bottom portion, wherein the upper portion and the bottom portion are sealingly connected about a removable and configurable dispersion plate;

pumping a cleaning fluid into the bottom portion of the cleaning tank, the cleaning fluid passing through a plurality of perforations in the dispersion plate to create a turbulent flow in the bottom portion and a laminar flow in the upper portion;

applying an ultrasonic frequency using an ultrasonic transducer operably mounted to the upper portion to dislodge particulates from the electronic component; and

overflowing the cleaning fluid over an upper lip of the top portion, the cleaning fluid carrying the particulates dislodged from the electronic component by the ultrasonic vibration.

13. The method of claim 12 further comprising:

recirculating the cleaning fluid, the cleaning fluid collected within an overflow weir whereby the cleaning fluid is directed to an inlet side of the pump.

14. The method of claim 13 further comprising:

maintaining a temperature of the cooling fluid in a temperature range from ambient to 200 degrees F, the cleaning fluid flowing through an inline heat exchanger that selectively cools or heats the cooling fluid.

15. The method of claim 13 further comprising:

filtering the recirculated cleaning fluid with an inline-filter, the in-line filter retaining the particulates contained within the recirculated cleaning fluid.

16. The method of claim 12 wherein the removable and configurable dispersion plate is operably replaced with a second dispersion plate, the second dispersion plate including a plurality of second perforations, the second perforations configured to vary the characteristics of the laminar flow and the turbulent flow.

17. An ultrasonic cleaning system for precision cleaning of electronic components, the cleaning tank comprising:

a cleaning tank adapted to hold an electronic component comprising a top portion and a bottom portion, the top portion including at least one operably mounted ultrasonic transducer as well as a lower flanged perimeter edge and the bottom portion including an upper flanged perimeter edge, the top portion and the bottom portion sealingly connected with a configurable dispersion plate removably mounted between the lower flanged perimeter edge and the bottom flanged perimeter edge;

a circulation pump for pumping a cleaning fluid to the cleaning tank; and

an overflow weir sealingly attached to an exterior of the top portion below an upper lip of the cleaning tank;

wherein the cleaning fluid is introduced into an inlet port in a floor of the bottom portion such that the cleaning fluid flows upward through a plurality of perforations in the dispersion plate, the dispersion plate creating a turbulent flow in the bottom portion and a laminar vertical flow in the top portion; and

wherein the ultrasonic transducer generates an ultrasonic cavitation in the cleaning fluid for dislodging a particulate from the electronic component, the particulate being transported out of the cleaning tank and into the overflow weir by the laminar vertical flow.

18. The ultrasonic cleaning system of claim 17 wherein the dispersion plate is sealingly and removably mounted between the lower flanged perimeter edge and the second flanged perimeter using a plurality of fasteners, an upper gasket and a lower gasket.

19. The ultrasonic cleaning system of claim 18 wherein the plurality of fasteners comprise a plurality of external clamps.

20. The ultrasonic cleaning system of claim 18 wherein the upper gasket and the lower gasket comprise a gasket material selected from the group consisting essentially of: Teflon, PVDF, EPDM, Viton or perflourinated elastomer.

21. The ultrasonic cleaning system of claim 17 wherein a sum of the plurality of perforations defines a total perforation area and wherein the total perforation area is less than 45% of the dispersion plate.

22. The ultrasonic cleaning system of claim 21 wherein the total perforation area is slightly less than or slightly greater than an inlet area of the inlet port.

23. The ultrasonic cleaning system of claim 17 wherein each of the plurality of perforations has a perforation diameter within the range of 0.001 – 0.250 inches.

24. The ultrasonic cleaning system of claim 17 wherein the plurality of perforations is configured in a close hex arrangement on the dispersion plate.

25. The ultrasonic cleaning system of claim 17 wherein the top portion and the bottom portion comprise stainless steel.

26. The ultrasonic cleaning system of claim 17 wherein the floor includes an inlet plate for directing an inlet flow outwardly and evenly throughout the bottom portion.

27. The ultrasonic cleaning system of claim 17 wherein the ultrasonic transducer is operably selected to supply ultrasonic energy within the upper tank portion at a suitable ultrasonic frequency of between 28 KHz and 2.5 MHz.

28. The ultrasonic cleaning system of claim 17 further comprising a degasification unit, said degasification unit removing dissolved gases from the cleaning fluid to promote the ultrasonic cavitation in the top portion of the cleaning tank.